

# How Homeland Security Affects Spatial Information

by Linda Zellmer

A recent article in SecurityFocus<sup>1</sup> described the fact that several U.S. government buildings in Washington, D.C., could no longer be clearly seen by people using MapQuest's aerial photo database. The resolution of aerial photos over the Capitol Building and the Naval Observatory grounds (the vice president's residence) has been decreased so that the buildings cannot be clearly seen. In addition, the roofs of the White House, Old Executive Office Building, and the Treasury Department have been masked with a solid color so that features on the roofs are no longer visible. A government secrecy watchdog group, Cryptome, has posted "before" and "after" photos on its Web site.<sup>2</sup> According to the article, the photos were altered at the request of the U.S. Secret Service.

This is an example of spatial information that was rendered unavailable after Sept. 11, 2001. It is not an isolated incident; such things have occurred both before and after 9/11. As a librarian who has dealt with spatial information for nearly 20 years, I have learned that access to it is not guaranteed. Data has been withheld or withdrawn for a variety of reasons. Therefore, when the Cartographic Users Advisory Council (CUAC) was invited to participate in the Homeland Security Working Group of the Federal Geographic Data Committee, I eagerly volunteered in hopes of being able to influence the information that would be available to future library users.

Spatial information has a variety of forms. It can be a place name in a database such as the Geographic Names Information System (GNIS), a map, or an aerial photograph. Even before Sept. 11, 2001, there were a number of reasons why government agencies withheld information from libraries and the public. In this article, I will discuss five of them: Data availability was limited because of the Cold War, federal legislation protecting certain types of natural and relic human features, Cooperative Research and Development Agreements (CRADAs), exorbitant government information pricing, and the threat of potential terrorism.

Then I'll discuss what started happening after 9/11, when data that had already been posted really started to disappear. One of the main problems was that agencies that removed information did so in isolation, without guidance, and did not check to see what other agencies and organizations were doing. Finally, I'll mention how a Homeland Security Working Group that I'm a member of is moving toward solutions.

## Data that Disappeared (Or Was Unavailable) Before 9/11

Although very few people are aware of it, the Cold War had a significant impact on the volume of spatial information made available to libraries and the public. While I was geology and map librarian at the University of Wyoming in the late 1980s, the library was able to order the National High Altitude Program aerial photographs of the entire state—*except* for the areas with the nuclear missile silos on the Francis E. Warren Air Force Base, east of Cheyenne. According to Roger Payne, executive secretary of the U.S. Board on Geographic Names, active military installations were removed from the Geographic Names Information System at the request of the Defense Mapping Agency (DMA) during the early 1980s. DMA objected to the fact that listings for features in the database included precise latitudes and longitudes. Despite the end of the Cold War, military installations have not been added to the GNIS database, although they can be clearly identified when viewing the Federal Lands data layer in the National Atlas of the United States (<http://www.nationalatlas.gov>), which is also produced by the USGS; lands managed by the military are shaded in hot pink. Even more detailed information, including maps, can sometimes be found on military base Web sites.<sup>3</sup> (See Figure 1.)

Legislation is another reason for the disappearance of spatial information. The Native American Graves Protection and Repatriation Act (PL 101-601, 25 U.S.C. 3001) protects Native American graves and their contents. Information about archaeological sites, their locations, and their contents is protected under the Archaeological Resources Protection Act (PL 96-95; 16 U.S.C. 470hh). The Federal Cave Resource Protection Act (PL 100-691, 16 U.S.C. 63) safeguards caves on federal lands; 27 states also have laws protecting cave resources. Finally, the Endangered Species Act (PL 93-205, 16 U.S.C. 1531-1544) shields ecosystems to preserve endangered plants and animals.

Since these laws were passed, the USGS has removed cave entrances from its topographic maps and the publicly accessible version of the GNIS. According to the GNIS frequently asked questions list,<sup>4</sup> people who want cave location information can request it through the Secretary of the Interior's office. Agencies have also removed archaeological sites from their maps. The U.S. Fish and Wildlife Service (FWS) and other federal agencies do not release the exact locations of endangered species. However, information on specific locations of archaeological sites and endangered species habitats *can* be obtained from state Natural Heritage Program and historic preservation agencies. So some groups remove the data, yet others don't.

Cooperative Research and Development Agreements (CRADAs) are the primary reason for loss of spatial data access during the years immediately prior to 9/11. A CRADA is a contract between a federal government agency and a private company or organization to jointly develop a product or commercialize information produced by the federal agency. CRADAs are an offshoot of the Stevenson-Wydler Technology Innovation Act of 1980 (PL 96-480, 15 U.S.C. 3701), as amended in 1986 by the Federal Technology Transfer Act (PL 99-502).

Information developed through a CRADA can be withheld from Freedom of Information Act requests for up to 5 years, even if the information was originally developed by a federal agency. When agencies enter into a CRADA, data that could have come to a library for free through the Federal Depository Library Program (FDLP) must instead be purchased, and cannot be copied by users.

Here is one example: Maptech is producing digital nautical raster charts, scanned nautical charts that can be used to help mariners navigate with a global positioning system, through a CRADA with the National Oceanic and Atmospheric Administration (NOAA). Last fall, the USGS removed from the public domain the Global GIS Database sections for North America, Europe, and Northern Asia, which were supposed to be sent to libraries through the FDLP. They are now only available for a fee through the American Geological Institute, the USGS's outside partner.

In the case of spatial information, data costs could be considerable. A number of agencies that produce spatial data—including the USGS, National Imagery and Mapping Agency (NIMA), and NOAA—are working with corporate partners to develop and disseminate spatial information, thus removing it from the public domain.

In the early 1990s, depository librarians were informed that the USGS would be providing Digital Raster Graphics (DRG) and Digital Orthophoto Quarterquadrangles (DOQQ) through the FDLP. However, because of budget problems, slow sales, and other difficulties, the USGS pulled this data from the FDLP. At about the same time, the USGS and Microsoft announced a CRADA to deliver the data over the Internet. As a result of this CRADA, libraries that wanted to provide DRGs and DOQQs received through the FDLP to their users were forced to purchase the data. At the time, pricing for this data was considerably higher than that of today, and was beyond the limit of many library budgets. USGS even forced other federal agencies to purchase the data, a move that proved beneficial to some libraries, as some agencies that purchased DRGs and DOQQs from USGS circumvented the sales program and made free copies for the libraries.

In the 1990s, section 112 of the Clean Air Act required the Environmental Protection Agency (EPA) to collect Risk Management Plans designed to address accident mitigation at chemical plants. These plans, which were supposed to be publicly available by 1999, should have contained an executive summary; information on the facility, including name, location, owner, and chemicals available; worst-case scenario information; accident history; prevention programs; and emergency response plans. However, before the plans were posted, the FBI, CIA, and Congress became concerned about whether the information could be used by terrorists. Therefore, the EPA reconsidered public access to the Risk Management Plans, and only posted portions of them on its Web site. Worst-case scenarios (information on the area that might be affected by a chemical accident, Figure 2), were only available in reading rooms.<sup>5</sup>

## Data Availability Since 9/11

The events of Sept. 11, 2001, had a profound impact on information access, including access to spatial information, especially on the Web. OMBWatch and the Government Documents Round Table of the American Library Association have both compiled lists of government information that has disappeared because of the threat of terrorism.<sup>6, 7</sup> Much of the spatial data that has been removed from the Web and libraries contains information regarding critical infrastructure, including water supply, transportation, emergency services, and energy. Access to environmental information has also been curtailed.

### A major post-9/11 problem was that agencies removed data in isolation.

According to the *Chronology of Disappearing Government Information* and other sources, government agencies began to remove information from Web sites soon after the 9/11 attacks. Here are some examples:

- The Nuclear Regulatory Commission shut down its Web site to review the information it was making available to the public. When the site went up again, information on the location and operations of nuclear power plants, as well as their aerial photos, had been removed.<sup>8</sup>
- Nuclear facilities were also removed from the GNIS and the National Atlas of the United States.
- The Department of Transportation's Office of Pipeline Safety removed the National Pipeline Mapping System.<sup>9</sup>
- NIMA asked the USGS and Federal Aviation Administration to discontinue sales of their large-scale topographic maps.
- NIMA also asked the Library of Congress (LC) and National Archives and Records Administration (NARA) not to allow people to use NIMA-produced maps;<sup>10</sup> public access to most maps at LC and NARA has since been restored.
- From November 2001 until January 2002, NIMA purchased exclusive rights to Ikonos imagery of Afghanistan from Space Imaging, a company in Thornton, Colo.,<sup>11</sup> which meant that no other organizations could purchase the data.
- Water resource reports have been removed from the USGS's Web sites and depository libraries.
- The USGS asked the Government Printing Office to order depository libraries to withdraw and destroy the publication *Source Area Characteristics of Large Public Surface-Water Supplies in the Conterminous United States: An Information Resource for Source-Water Assessment* (USGS Open File Report 99-248).<sup>12</sup>
- A recent report on Terrorism Preparedness by the National Conference on State Legislatures indicated that as of June 30, 2003, 34 states had passed laws to exempt information about public water supplies from open records law requirements;<sup>13</sup> some states have also exempted building plans for airports and public buildings from open records laws.
- The EPA has removed all Risk Management Plans from its Web site and limited the querying capabilities of its Envirofacts database.<sup>14</sup>

Interestingly, most of the spatial data that has been withdrawn by government agencies is available from other agencies or from the private sector. In fact, a student working on a dissertation at George Mason University was able to find enough publicly accessible data to identify vulnerable links in the nation's critical infrastructure.<sup>15</sup> U.S. pipeline, refinery, and energy production and transmission data can be licensed from PennWell, a company that markets energy and petroleum information. Although some

states have removed pipeline data from their geospatial data collections, others have not. Either way, pipelines can be easily found along roads; their routes have been cleared of vegetation and are marked by signs announcing buried pipelines. Plus, many of the NIMA maps that could not be used by researchers at LC and NARA are available in depository libraries. So researchers can simply search WorldCat to determine where the maps are available. Information on public water systems is available from the EPA's Local Drinking Water Information Web site (<http://www.epa.gov/safewater/dwinfo.htm>).

And here's proof that limiting access to chemical plants' Risk Management Plans has not made the facilities more secure. A recent *60 Minutes* report, "U.S. Plants: Open to Terrorists," examined security at chemical plants.<sup>16</sup> Correspondent Steve Kroft, a camera operator, and Carl Prine, a reporter for the *Pittsburgh Tribune Review*, were able to enter a chemical plant and walk around unchallenged for nearly 20 minutes. After leaving the plant, they were confronted by security and escorted to the plant's main office, where the local police were summoned. They were merely cited for trespassing, which carries a \$25 fine.

## Securing Spatial Data

It is clear that some of the original information that has been removed from public access is available from other sources, including commercial organizations and other government agencies. The National States Geographic Information Council (NSGIC) and the Federal Geographic Data Committee (FGDC) became concerned about the lack of guidance regarding access to spatial information. NSGIC developed a decision tree (Figure 3) to help its members judge whether data should be secured or offered publicly.<sup>17</sup>

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The FGDC established a Homeland Security Working Group to address concerns about publicly accessible spatial data and other issues. The Working Group is developing guidelines to identify sensitive spatial data and to determine if the need for security outweighs public benefit from access to the data. Two librarians—Tsering Wangyal Shawa, geographic information systems librarian at Princeton University, and I—were asked to represent the cartographic user community during the Working Group's discussions to develop guidelines for spatial data access. The guidelines are still under review at this time, so they are not yet available to the public. But rest assured, we're working on it.

## GLOSSARY

**Cartographic Users Advisory Council (CUAC)**—an organization that deals with issues involving cartographic materials and spatial data. It comprises 12 representatives from six national and regional library organizations.

**Defense Mapping Agency (DMA)**—an arm of the Department of Defense that produces nautical and aeronautical charts and other maps and spatial data needed by the military. It became part of the National Imagery and Mapping Agency in 1996.

**Digital Raster Graphics (DRG)**—a scanned image of a USGS topographic map

**Digital Orthophoto Quarterquadrangles (DOQQ)**—a digital aerial photograph that covers one-quarter of the area of a topographic map. The photograph has been corrected for distortion caused by camera tilt.

**Federal Geographic Data Committee (FGDC)**—a committee of representatives from U.S. government agencies that develops policies, standards, and procedures to enable sharing of geospatial data among organizations

**Geographic Names Information System (GNIS)**—a database of place names that lists all features that appear on the 1:24,000 USGS topographic maps

**National Imagery and Mapping Agency (NIMA)**—an agency in the Department of Defense that produces nautical and aeronautical charts, maps, and spatial data needed by the military. It has now been renamed the National Geospatial-Intelligence Agency.

**National States Geographic Information Council (NSGIC)**—an organization of state geographic technology information agencies

## Footnotes

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